

MEMORANDUM

Date: January 17, 2014
To: Water Right File 63-31630
From: shemenway
Re: 63-31630 Field Report Narrative and Licensing Review

A beneficial use field examination was conducted by Ed Squires (Hydro Logic Inc) on 1/30/2012. **On the field examination report it states that well #26 has the same POD, but in the licensing review (see spreadsheet) it was confirmed that well #26 is at a different location than well #25 and #28.**

Well #25 (D0030863) is housed in a 28 ft X 28 ft cinder block pump house, was drilled on 3/30/2004 by Treasure Valley Drilling. It is a 24 inch casing, 335 ft deep, 40 ft static, 200 Hp Turbine US Electrical Motor serial # H06-41078559-008R-03, FlowWay Pump model 14DKH, 4-stage, with 14 inch bowl to a 10 inch discharge through a 10 inch McCrometer propeller MW500 model E7000-000, Serial # E07-12019-10 flowmeter, calibrated 11/28/2007, which discharges through 10 inch ductile iron to the distribution system for the City of Meridian. Well 25 is the lead pump for this pressure zone.

Conditions of the Permit: Does not meet the conditions of the permit, numbers 9, 10, and 12 (see attached 1/21/2014 email from Dennis Owsley). There was a protest by Bureau of Reclamation, which added conditions 9, 10, and 11 to the permit. The 3/19/2009 Affidavit of Publication stated that water bearing zone to be appropriated is 300 to 900 feet, but conditions 9 – 11 were not included in the public notice.

- The well violates condition 9 on the permit that states "The right holder shall extend unperforated surface casing from land surface to a confining layer directly overlying the top of the aquifer open to the wells." This condition is violated as the well screened interval begins at 183 feet, in a sand and gravel sequence that extends from 105 to 194 feet.
- The well violates condition 10 on the permit, as the casing extends to a depth of 195 feet, not the minimum of 200 feet stipulated in the condition.
- The well violates condition 12 on the permit, as the screened interval is from 183 – 334 feet, above the specified "water bearing zone to be appropriated is 300 to 900 feet" (condition 12). The upper portion of the screen set at 183 feet is in a sand and gravel sequence that extends up to 104 feet below land surface. Therefore, by placing the screen within this water bearing zone, the well is capable of withdrawing water from the upper 105-194 foot water bearing zone.
- An agreement was made between the city of Meridian and the USBOR to resolve a protest associated with this permit. The final construction of the well violates the agreement that resolved the protest.
- The final construction of the well violates the affidavit for publication that stated the water bearing zone to be appropriated is 300 to 900 feet.
- Although the well was constructed with the screened interval as shallow as 183 feet below land surface, the diagram included in the water right file indicates that the well was drilled to over 700', with adequate producing water bearing zones below 500 feet, that if completed within this zone, would have satisfied the agreement with BOR and the conditions included on the permit. It does not appear that the shallow completion selected for the final construction of the well was the only option available, based on the well schematic included in water right file.

Well #28 (D0053548) is housed in a 30 ft X 58 ft cinder block pump house, and was drilled on 7/17/2009 by Treasure Valley Drilling. Well #28 has a 24 inch casing, is 731 ft deep, 53.9 ft static, has a 250 Hp Turbine US Electrical Motor serial # R09-30720134-6T-03, National Pump model M14XXHC, 4-stage, with a 14 inch bowl to a 10 inch discharge through a 10 inch ABB Flow meter, electro-magnet ABB make, model MFE2513, serial # 3K62000053500, calibrated 8/2010, discharging through 10 inch ductile iron to the distribution of the City of Meridian. The system runs at 60 - 90 psi. Well #28 is the lead for pressure zone 5.

Conditions of the Permit: Meets all conditions.

Beneficial Use is for the municipal service area for the City of Meridian (an updated shapefile was submitted by the City of Meridian on 1/16/2014).

POD Overlap: None. Each well was filed under a separate water right number. On 1/16/2014, an email was sent to Ed Squires suggesting that they file a transfer for the water rights connected with wells that are no longer in service, and to be able to show the system as it is currently constructed. (See attached Well #/Water Right # spreadsheet).

POU Overlap: The Municipal Service Area for the City of Meridian. (An updated shapefile for the City of Meridian was submitted on 1/16/2013 by the City of Meridian, since there was nothing linked to an Existing Large POU for this water right or to any other water rights for the City of Meridian. The shapefile in the Adjudication files is outdated and does not match the pdf shape submitted with the application for 63-31630. (See attached Well#/Water Right # spreadsheet).

CFS:

Well #25:

- (1) At the time of arrival of the 1/30/2012 field examination: 1050 gpm (2.34 cfs), at 67 psi
 - (2) Manually increased rate to simulate high demand (summer): 2250 gpm (5.02 cfs)
 - (3) HLI Performance Curve (figure 13 in the field exam): 2210 gpm (4.93 cfs)
 - (4) Well Drillers Report: 2340 gpm (5.22 cfs, pumped for 9 hrs)
- Recommend system capacity for well #25 at simulated high demand: 5.02 cfs

Well #28:

- (1) At the time of arrival of the 1/30 2012 field examination: 321 gpm (0.72 cfs), at 63 psi
 - (2) Manually increased rate to simulate high demand (summer): 2260 gpm (5.04 cfs)
 - (3) HLI Hydraulic Testing (figure 19 in the field exam): 2260 gpm (5.04 cfs)
- Recommend system capacity for well #28 at simulated high demand: 5.04 cfs

Combined Limits:

The diversion rate for well #25 and #28 (for water right 63-31630) if licensed, will be for 5.0 cfs, with the combined diversion rate for wells #25 and #28 to not exceed 5.0 cfs.

Administrative Memo, Licensing No. 1 states: "In situations where a new point of diversion authorized under the permit is developed, but an addition increment of capacity or beneficial use is not developed for the municipal system, a license may be issued limiting the diversion rate in combination with other rights in the municipal system to the existing capacity of the municipal system." However, **water right 63-31630 will not be licensed with combined diversion rate limits with other water rights on the City of Meridian water system, since the amended permit for 63-31630 was approved on May 7, 2009, which is prior to the October 19, 2009 approval of Administrative Memo, Licensing No. 1.**

RECOMMEND (if conditions are met):

5.0 cfs (combined rate for wells #25 and #28), Municipal Use (City of Meridian service area)

At this time, I would not recommend licensing water right 63-31630 until either the conditions have been met; conditions have been waived by the Bureau of Reclamation, or Dept. Administratively approved.

Review By: Sandy Hemenway

For: Licensing Review for the City of Meridian - Municipal Well Sites 63-31630 and 63-31318

Date: 1/21/2014

Format: Degrees minutes seconds

Well/Description	Latitude	Longitude	Div. Rate	Drilled	Water Right #	Priority Date	Comments
Water Tower	N43.36.05	W116.23.22	N/A				
#1, NWSW Sec 7, T3N, R1E	not acquired	not acquired	1.67 cfs	1910	63-32567	4/22/1910	Meridian Rd & Idaho
#2, NWSW Sec 7, T3N, R1E	not acquired	not acquired	0.78 cfs	unknown	63-32568	2/1/1928	Meridian Rd & Idaho
#3, SESE Sec 12, T3N, R1W	N43.60831	W116.39385	0.78 cfs	May-52	63-2893	2/11/1952	11 W Bower (Bower & Meridian)
#4	not acquired	not acquired	never used				well abandoned/WR forfeited
#5, NESW Sec 7, T3N R1E	not acquired	not acquired	1.66 cfs	10/7/1961	63-3252	8/3/1961	well abandoned; E. Id. & Pine
#6 NENW Sec 12, T3N, R1W	not acquired	not acquired	0.70 cfs	3/20/1973	63-7105	5/13/1968	well abandoned; W. 8th & Camillia
#7 SWSE Sec 1, T3N, R1W	N43.37.22	W116.24.08	1.91 cfs	8/21/1973	63-7978	5/10/1974	NW 8th & W Storey Ave
#8 NWNW Sec 18, T3N, R1E	N43.36.15	W116.23.28	1.67 cfs	5/2/1975	63-9849	12/22/1981	Storey Park; S Main/E Franklin Rd
#9 SWSE Sec 12, T3N, R1W	N43.36.20	W116.24.07	1.89 cfs	3/10/1997	63-8331	6/28/1976	Franklin Rd & NW 7th
#10 NWSW Sec 6, T3N, R1E	N43.37.22	W116.22.40	2.00 cfs	1/12/1977	63-8332	6/28/1976	Willow Brook & Jericho
#11 SE5W Sec 8, T3N, R1E	N43.36.25	W116.21.57	2.80 cfs	6/25/1979	63-10105	6/29/1983	Lanark St E. of Nola
#12	not acquired	not acquired	1.34 cfs	9/24/1990	63-10840	7/6/1989	10 Mile & Cherry Ln.
#12	not acquired	not acquired	2.00 cfs	12/7/1994*	63-12162	7/6/1989	" " (*well deepened;added cfs)
There never was a well #13.							
#14 NENW Sec 19, T3N, R1E	not acquired	not acquired	3.00 cfs	9/27/1992	63-11737	3/20/1992	SE 5th St & Overland Rd
#15 NENE Sec 11, T3N, R1W	not acquired	not acquired	3.00 cfs	5/1/1993	63-11922	8/20/1992	Sunnyslope Dr & Linder Rd
#15			1.46 cfs	5/16/1993*	63-12173	2/14/1995	*increased cfs to capacity of well
#16 NWNE Sec 8, T3N R1E	not acquired	not acquired	3.00 cfs		63-12039	6/27/1993	Eagle Rd & Rosario
#17 NWSW Sec 20, T3N R1E	not acquired	not acquired	4.50 cfs	6/27/1996	63-12295	11/9/1995	Locust Grove & Time Zone
#18 SWSW Sec 32 T4N R1E	not acquired	not acquired	4.50 cfs	4/26/1999	63-12181	5/20/1995	Summerfield & Summercove
#19 NENE Sec 3 T3N R1W	not acquired	not acquired	4.50 cfs	4/15/1998	63-12378	4/23/1997	Ten Mile Rd & Ustick
#20 SESE Sec 36 T4N R1W	not acquired	not acquired	4.50 cfs	9/30/1998	63-12416	9/10/1997	Ustick & Meridian Rd (w/booster)
#20A SESE Sec 36 T4N R1W	not acquired	not acquired	5.00 cfs	9/30/1998	63-31677	12/22/2009	Ustick & Meridian Rd
#20B SESE Sec 36 T4N R1W	not acquired	not acquired	"	9/30/1998*	63-31677	12/22/2009	" deepened 2004 & 2012
#21 NWNW Sec 18 T3N R1E	N43.36.10	W116.23.20	4.50 cfs	9/5/2000	63-12560	1/5/2000	Water Tower Ln & 1st St
#22 SWNE Sec 24 T3N R1W	N43.35.038	W116.24.198	5.00 cfs	9/7/2001	63-31138	3/20/2001	Stoddard (Bear Crk. Park)
#23 (high uranium in well)	not acquired	not acquired	5.00 cfs	3/15/2002	63-31281	8/10/2001	Silverstone Wy & Overland Rd
#24	N43.37.50.5	W116.24.51.1	4.46 cfs	9/25/2002	63-31318	8/29/2001	Tumble Ck. & Blue Springs
#25	N43.34.31.6	W116.21.37.53	5.0 cfs	Mar.30/04	63-31630	3/11/2003	Victory Rd & Brandysjewel
#26 PERMIT/proof due 5/14	not acquired	not acquired	4.90 cfs	3/29/2005	63-31858	2/23/2004	Locust Gove & Dunwoody
#27 PERMIT/proof due 5/15	not acquired	not acquired	4.90 cfs	11/2/2007	63-32083	2/10/2005	Ten Mile Rd & Franklin Rd
#28	N43.33.14.29	W116.21.38.12	5.0 cfs	7/17/2009	63-31630	3/11/2003	Victory Rd & Brandysjewel
#28 PERMIT/proof due 6/15	"	"	0.76 cfs		63-33320	12/30/2009	*deepen one well; drill another 1
Irrigation; diversion to storage use		NON-MUNICIPAL			63-10921		
Domestic use		NON-MUNICIPAL			63-15551		
Fire Protection/Municipal (D24) use		MUNICIPAL			63-31957		
Irrigation use		NON-MUNICIPAL			63-33318		

TOTAL LICENSED/DECREED: 71.62cfs (not including permitted water rights, non-municipal water rights, and water right 63-31630)

	Shared POU (Los Alimitos Park Subdivision); not shared POD
	Abandoned wells
	Backup wells
	Water Rights
63-31630	#25 and #28, on the same water right number proposed 5.0 cfs total diversion rate
63-31677	#20A and #20B, on the same water right number

From: Owsley, Dennis
Sent: Tuesday, January 21, 2014 10:46 AM
To: Hemenway, Sandy
Subject: City of Meridian well #25

Sandy

Per our discussion this morning, here is a summary of my thoughts:

- The well violates condition 9 on the permit that states "The right holder shall extend unperforated surface casing from land surface to a confining layer directly overlying the top of the aquifer open to the wells." This condition is violated as the well screened interval begins at 183 feet, in a sand and gravel sequence that extends from 105 to 194 feet.
- The well violates condition 10 on the permit, as the casing extends to a depth of 195 feet, not the minimum of 200 feet stipulated in the condition.
- The well violates condition 12 on the permit, as the screened interval is from 183 – 334 feet, above the specified "water bearing zone to be appropriated is 300 to 900 feet" (condition 12). The upper portion of the screen set at 183 feet is in a sand and gravel sequence that extends up to 104 feet below land surface. Therefore, by placing the screen within this water bearing zone, the well is capable of withdrawing water from the upper 105-194 foot water bearing zone.
- An agreement was made between the city of Meridian and the USBOR to resolve a protest associated with this permit. The final construction of the well violates the agreement that resolved the protest.
- The final construction of the well violates the affidavit for publication that stated the water bearing zone to be appropriated is 300 to 900 feet.
- Although the well was constructed with the screened interval as shallow as 183 feet below land surface, the diagram included in the water right file indicates that the well was drilled to over 700', with adequate producing water bearing zones below 500 feet, that if completed within this zone, would have satisfied the agreement with BOR and the conditions included on the permit. It does not appear that the shallow completion selected for the final construction of the well was the only option available, based on the well schematic included in water right file.

I hope this helps. Please let me know if you need additional information, more specifics, or anything else.

Dennis

809489

Form 238-7
3/95-C96IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only			
Inspected by			
Twp	Rge	Sec	
1/4	1/4	1/4	
Lat:	:	Long:	:

1. DRILLING PERMIT NO. D0030863

Other IDWR No. «Other IDWR No»

2. OWNER:

Name City of Meridian # 25Address 33 E Idaho Ave.City Meridian State ID Zip 83642

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location
N

W	E	S	Gov't lot	County	Adm	Twp	3	North	☒	or	South	☐
						Rge	1	East	☒	or	West	☐
						Sec	29	«QQQ»	NW 1/4	NE 1/4		

Lat: : : Long: : :

Address of Well Site 1600 ft W. of Eagle Rd. & Victory Rd.Intersection City Meridian

(Give at least name of road + Distance to Road or Landmark)

I.I. «Lb» Blk. «Blk» Sub. Name «Subname»

4. USE:

☐ Domestic ☒ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK check all that apply (Replacement etc.)

☒ New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD

☐ Air Rotary ☐ Cable ☒ Mud Rotary ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK		AMOUNT		METHOD
Material	From	To	Sacks or Pounds	
Bentonite Chip	0	57	7 yds	Pour
Bentonite Grout	0	190	1650 gal	Pump
Bentonite Chip	190	195	1.5 yds	Pour
Filter Sand 8-16	12-20	190-334	4 yrd	Pour

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 195.6Was drive shoe seal tested? ☒ Y ☐ N How? Pressure

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
24"	1	57	.250	steel	☒	☐	☒	☐
17"	2	195		PVC	☒	☐	☐	☒

Length of Headpipe 0 Length of Tailpipe 0

9. PERFORATIONS/SCREENS

☐ Perforations Method
☒ Screens Screen Type Johnson High Flow Screen

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
183	194	.015		8"	S.S.	☐	☒
194	205	.005		8"	S.S.	☐	☒
205	231	.000		8"	S.S.	☐	☒

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

40 ft. below ground Artesian Pressure 0 lb
 Depth flow encountered 200-334 ft. Describe access port or control devices: CAP

11. WELL TESTS:

☒ Pump ☐ Bailor ☐ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
2340	132	180	9hr

Water Temp. 56 Bottom hole temp. 56Water Quality test or comments: Depth first Water encountered 30

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Y	N
36"	0	3	Top Soil		☒
36"	3	57	Sand & Gravel	☒	
24"	57	60	Brown Clay		☒
24"	60	80	Sand & Gravel	☒	
24"	80	85	Brown Clay		☒
24"	85	96	Course Sand	☒	
24"	96	105	Tan Clay		☒
24"	105	194	Sand & Gravel	☒	
15"	194	212	Tan Clay		☒
15"	212	220	Sand	☒	
15"	220	225	Tan Clay		☒
15"	225	250	Course Sand & Gravel	☒	
15"	250	260	Clay		☒
15"	260	288	Course Sand	☒	
15"	288	296	Tan Clay		☒
15"	296	317	Course Sand	☒	
15"	317	324	Course Sand & Gravel	☒	
15"	324	326	Tan Clay		☒
15"	326	335	Course Sand & Gravel	☒	
Continued Screen Placement					
From	To	Slot	Diameter	Material	Liner
231	262	.035	8"	S.S.	☒
262	270	.000	8"	S.S.	☒
270	288	.015	8"	S.S.	☒
288	296	.000	8"	S.S.	☒
296	317	.020	8"	S.S.	☒
317	325	.025	8"	S.S.	☒
325	288	.015	8"	S.S.	☒

Completed Depth: 334 (Measurable)Date: Started 1-8-04 Completed 3-30-04

13. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Treasure Valley DrillingFirm No. 560Firm Official [Signature]Date 6-16-04Supervisor or Operator [Signature]Date 6-16-04

(Sign once if Firm Official & Operator)

Date: 6/17/2004 Time: 10:26 AM

RECEIVED

JUN 18 2004

WATER RESOURCES
WESTERN REGION

* Waiver accepted by IDWR to use PVC 12/8/2003

Hydro Logic, Inc.

1002 W. Franklin Street, Boise, ID 83702 (208) 342-8369, (Fax) 342-3100, hydrologic@qwest.net

October 13, 2003

Mr. Rob Whitney
Idaho Department Resources of Water
Western Regional Office
2735 Airport Way
Boise, ID 83705

RECEIVED

OCT 14 2003

WATER RESOURCES
WESTERN REGION

** Waiver Approved as requested
TBH
12-8-03*

Subject: City of Meridian #25 Municipal Well - Waiver of Administrative Rules For Well Construction Standards to Use PVC Plastic Well Casing to Construct a Water Well.

Dear Mr. Whitney:

*** Please consider this letter as an Attachment to the City of Meridian's Well #25 Application For Drilling Permit (For the Construction of a Well). On behalf of the City, I am requesting IDWR to approve a waiver to the Administrative Rules For Well Construction Standards for the use of PVC plastic well casing in the construction of the proposed #25 municipal well. The proposed well will consist of approximately 260 feet of 17-inch outside diameter PVC casing with a wall thickness of 1-inch. The use shall conform to manufacturers recommended specifications to meet, or exceed, a Standard Dimension Ratio of SDR-17 according to the American Society for Testing and Materials (ASTM F480).

Under this cover, I am submitting specifications for PVC plastic well casing which I am strongly recommending for use in the new # 25 supply well. Over the last few years, we have continued to improve the City's well construction techniques and the productivity of its wells. One of the more significant advances was made with the transition to fluid rotary drilling techniques. Therefore, we no longer utilize drill-and-drive methods, but rather, we now install large diameter pump-chamber casings in open rotary-drilled bores. This method of well construction has many advantages including the option for installation of plastic casing joined with splined joints (no glue). PVC casing is not affected by galvanic corrosion, it does not support iron bacteria, it is not subject to damage from chlorination/acidification of the well, and it resists encrustation. In recent years, we have traced several of the City's water quality problems to the use of steel well casing. Another large advantage is the speed with which the casing can be installed. Our present method of welding steel casing requires that the open borehole remain open and uncirculated for up to two days while the casing and bentonite seal are emplaced. With PVC casing, both could be installed in a single work period without worker over time, without nighttime disturbance to neighbors, and with a lessened risk of placing the well seal (expedited installation means thinner mud to pour through).

You have personally observed our successful, installation of PVC casing (17-inch) used for the City of Meridian's #24 supply well without problems (2002) and, since that time, we have completed PVC municipal wells for the City of Caldwell and Tamarack Resort. The increase in Aquifer Storage and Recovery wells worldwide has commensurately increased the use of large diameter plastic casings because the ferrous composition of steel casing is problematic to

injection wells. As a result, PVC casing is now routinely installed in large diameter wells to 1000 feet deep; most in municipal settings for Cities (Table 1).

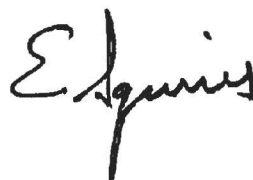
The City of Meridian's #24 supply well is believed to be the first large-bore use of PVC casing for a municipal water well in Idaho and the first use anywhere employing pour-from-the-surface full-depth bentonite chip surface seal. Plastic casing has some limitations in that it is more expensive than steel pipe and, because of its relatively thick wall, inside diameters are somewhat reduced. However, we believe that the trade-offs in water quality and corrosion offset the limitation in casing size.

We have thought through the necessary changes to our drilling program to accommodate the use of plastic pipe and have reviewed the products with respect to hydraulic collapse considerations and temperature. The CertainTeed Corporation's design engineers have reviewed our proposed well construction techniques and have found that it is an acceptable application for their product. The materials are well documented in national materials testing organizations such as ASTM and are designed to rigorous engineering standards. Because the precise composition of our locally available bentonite has never been subjected to rigorous testing and evaluation for swell volumes etc., and because the exact circumstances of our proposed application had previously not yet been accomplished (to my knowledge), we were, to some extent, still breaking new ground. Since the completion of Meridian's #24 well, we have utilized Baroid bentonite chips (3/4") in the Tamarack #5 municipal well with good results. In addition to a successful first-hand completion in this valley, I have also spoken with on-site personnel with considerable experience with large diameter PVC well casing in Florida and along the East coast who regularly install SDR 17, 16-inch PVC casing to depths over 1000 feet below ground. These installations have utilized cement-based grouts with temperatures of hydration exceeding 100 °F and with significantly greater weight in the annulus between the casing and borehole wall.

I have included steel casing as a supplemental item in the #25 well drilling specifications and bid schedule because the City of Meridian must consider the cost of the PVC pipe (to be submitted by bids) before proceeding with actual installation and to allow for options in the event that unforeseen drilling difficulties would force us to revert to using steel casing. Please let me know if I can provide additional information. Although I have forwarded literature for CertainTeed's product, Johnson Screens also supply PVC casing with flush joint, screw-together pipe.

Sincerely,

Ed Squires



c: Gary D. Smith, P.E., Public Works Director, City of Meridian
Rick Clinton, Superintendent, Meridian Water Department

ACTION OF THE DEPARTMENT OF WATER RESOURCES

This Permit is

Approved

Date

12-8-03

If approved, this permit authorizes the construction or modification of a well subject to the following conditions. READ CAREFULLY

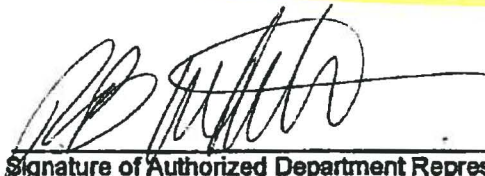
GENERAL CONDITIONS:

1. This drilling permit is valid for two (2) months from the above approval date for the start of construction and is valid for one (1) year from the approval date for completion of the well unless an extension has been granted.
2. This permit does not constitute an approval of the District Health Department or the Idaho Department of Health and Welfare which may be required before construction of this well. All wells must be drilled a minimum distance of 100 feet from a drain field. Domestic and Public Water Supply wells must be drilled a minimum of 50 feet and 100 feet respectively from a septic tank.
3. The well shall be constructed by a driller currently licensed in the State of Idaho who must maintain a copy of the drilling permit at the drilling site.
4. Approval of this drilling permit does not authorize trespass on the land of another party.
5. This permit does not constitute other local, county, state or federal approvals which may be required for construction of a well.
6. This drilling permit does not represent a right to divert and use the water of the State of Idaho.
7. If a bottom hole temperature of 85° or greater is encountered, well construction shall cease and the well driller and the well owner shall contact the Department immediately.
8. Idaho Code, S 55-2201 - 55-2210 requires the applicant and/or his contractors to contact "Digline" (DigLine is a one-call center for utility notification) not less than 2 working days prior to the start of any excavation for this project. The "DigLine" Number for your area is 1-800-342-1585.

SPECIFIC CONDITIONS:

Well construction shall be consistent with Plans and Specifications approved by IDEQ and Attachment I.

Waiver approved for use of SDR-17 PVC well casing.



Signature of Authorized Department Representative

Sr. WR Agent

Title

Receipt No. 0031018

Received by ZB

Fee \$200⁰⁰

Date

10-14-03

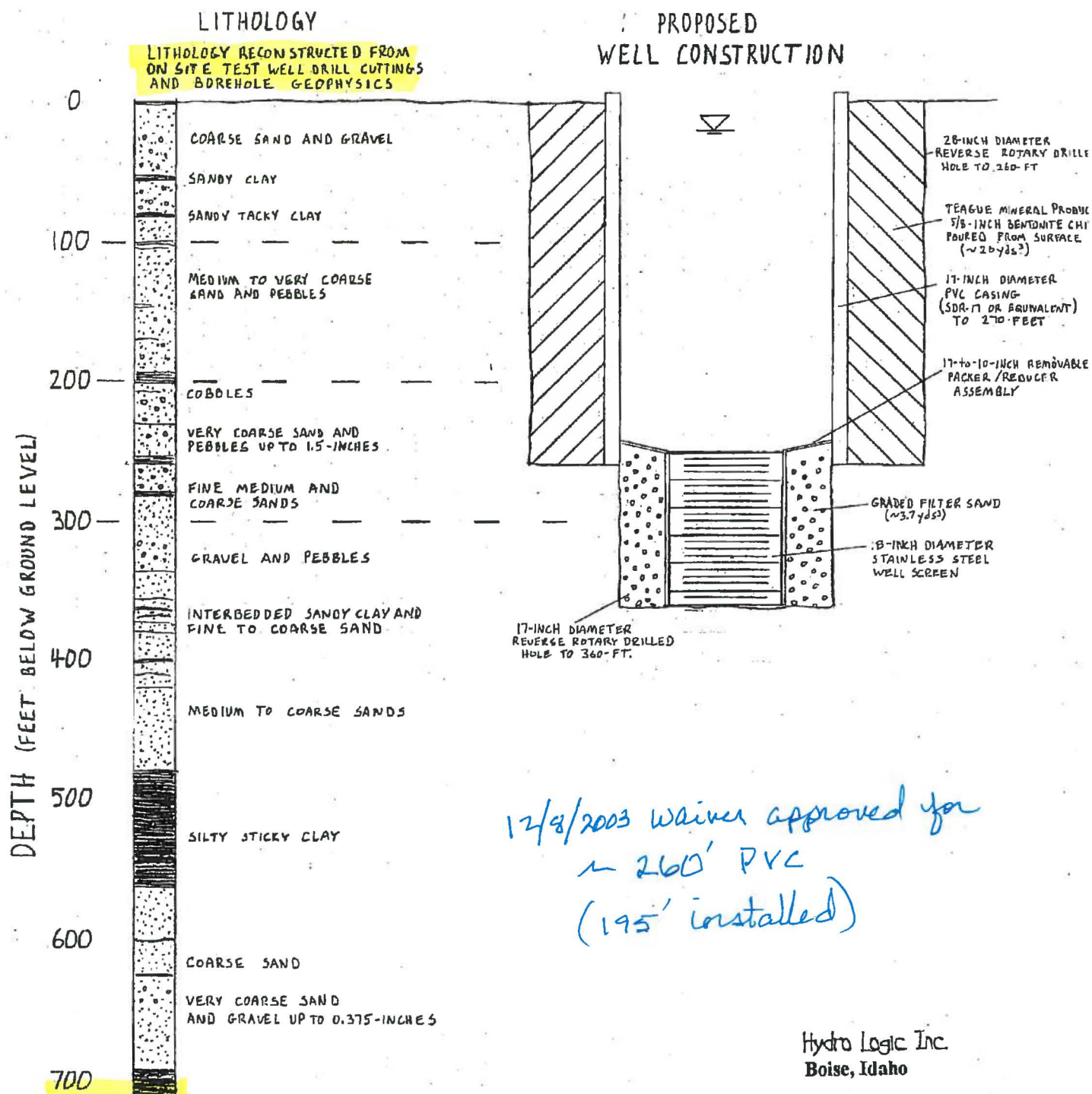
EXTENSION OF DRILLING PERMIT

Extension approved by _____

Approval Date _____

This extension expires: _____

Hachmen, I D.P. Tag 7, - LCC50885 CITY OF MERIDIAN #25 SUPPLY WELL PROPOSED WELL CONSTRUCTION



IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

855803

1. WELL TAG NO. D 0053548

Page 1 of 3

Drilling Permit No. **907763-855803**Water right or Injection well # **63-31630****2. OWNER**Name **City of Meridian -**

Supply Well #28

Address **33 E. Broadway Ave., Suite 200**City **Meridian** State **ID** Zip **83642****3. WELL LOCATION:**Twp. **03** North ☒ or South ☐ Rge. **01** East ☒ or West ☐Sec. **32** SE 1/4 SW 1/4 NE 1/4
10 acres 40 acres 160 acresGov't Lot _____ County **Ada**Lat. **43° 33.238'** (Deg. and Decimal minutes)Long. **116° 21.637'** (Deg. and Decimal minutes)Address of Well Site **E. Taconic Dr. ~1/2 mile south of Amity Rd. & 1,600 feet west of Eagle Rd.** City **Meridian**Lot **24** Blk. **1** Sub. Name **Blackrock Sub. No. 1****4. USE:**☐ Domestic ☒ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other**5. TYPE OF WORK** check all that apply (Replacement etc.)☒ New Well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other**6. DRILL METHOD:**☐ Air Rotary ☒ Mud Rotary ☐ Cable ☒ Other **Auger****7. SEALING PROCEDURES**

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure

SEE TABLE PAGE 2

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing	Liner	Threaded	Welded
24"	+1'	53'	0.375"	Steel	☒	☐	☐	☒
17.4"	0	571'	SDR17	CertainTeed PVC	☒	☐	☐	☐
			(O-ring coupled)		☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) **571' (pushed into clay)****9. PERFORATIONS/SCREENS:**Perforations ☐ Y ☒ N Method **N/A**Manufactured screen ☒ Y ☐ N Type **Johnson "Hi-Flow" Stainless Steel**Method of Installation **Lowered, centralized and enveloped with filter sand**

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule

SEE TABLE PAGE 3

Length of Headpipe **24 feet** Length of Tailpipe **no tailpipe**Packer ☒ Y ☐ N Type **removable 12"/9" with two 3-lip fig. "K" packers****10. FILTER PACK:**

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
#8-#16 filter sand	549	713	116.1 cu. ft	pour and tag into place

11. FLOWING ARTESIAN:Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) **223.9 PSI (571' - 54')**Describe control device **to be installed by City of Meridian****12. STATIC WATER LEVEL and WELL TESTS:**Depth first water encountered (ft) **6 feet bgl** Static water level (ft) **53.9 feet bgl**Water temp. (°F) **71.3 °F** Bottom hole temp. (°F) **not measured**Describe access port **18" steel wellhead with welded steel cap****Well test:****Test method:**

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Pump	Bailer	Air	Flowing artesian
14.77 feet	1,000 gpm	20 minutes	☒	☐	☐	☐
73.69 feet	2,250 gpm	420 minutes				
93.63 feet	3,550 gpm	20 minutes				

Water Chemistry: pH=8.11; DO=+0.4; Cond.=352uS; ORP=-88mV

Water Quality test or comments: **no degassing; minor sulfide; no Iron taste****13. LITHOLOGIC LOG and/or repairs or abandonment:**

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	N
30"	0	3	Top Soil		☒
30"	6	52	Sandy Gravel and Cobbles	☒	
23"	52	56	Sticky Brown Clay	☒	
23"	56	57	Sandy Brown Clay	☒	
23"	57	66	Brown Clay	☒	
23"	66	84	Coarse Grained Tan-to-Red Sand	☒	
23"	84	85	Sandy Tan Clay	☒	
23"	85	87	Brownish Gray Clay	☒	
23"	87	117	Crs Tan Sand & Very Few Thin Tan Clay Layers	☒	
23"	117	119	Sandy Grayish Brown Clay	☒	
23"	119	137	V. Crs Sand and a Few Thin Tan Clay Layers	☒	
23"	137	157	Coarse Grained Tan Sand	☒	
23"	157	214	Coarse Grained Brown Angular Sand	☒	
23"	214	230	VC Grained Sand w/ Some Layers of Brown Clay	☒	
23"	230	303	Brown & Reddish Sand	☒	
23"	303	311	Pea Gravel & Brown Sand	☒	
23"	311	371	Coarse Grained Brown Sand	☒	
23"	371	381	Pea Gravel & Large Brown Sand	☒	
23"	381	388	Sandy Blue Clay	☒	
23"	388	442	Cemented Pea Gravel & Thin Beds of Blue Clay	☒	
23"	442	457	Blue Clay	☒	
23"	457	523	Fine Blue Sand with Thin Blue Clay Layers	☒	
23"	523	527	Blue Clay & Lenses of Black Shale	☒	
23"	527	547	Fine Grained Blue Sand	☒	
23"	547	549	Black Shale	☒	
23"	549	563	Black Sand with Some Coarse Brown Sand	☒	
23"	563	567	Black Sand	☒	
23"	567	569	Sandy Blueish Gray Clay	☒	
23"	569	571	Bluish Gray Clay	☒	

CONTINUED ON PAGE 2

Completed Depth (Measurable) **713 feet below ground**Date: Started **5/18/2009**Completed **7/17/2009****14. DRILLER'S CERTIFICATION**

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name **Treasure Valley Drilling** Co. No. **560***Principal Driller **George Post** Date **7-31-2009***Driller **Devin Strong** Date **7-31-2009**

*Operator II _____ Date _____

Operator I _____ Date _____

* Signature of Principal Driller and rig operator are required.

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WATER RESOURCES
WESTERN REGIONWATER RESOURCES
WESTERN REGION

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0053548

Page 3 of 3

Drilling Permit No. **907763-855803**Water right or Injection well # **63-31630**

2. OWNER

Name **City of Meridian -**

Supply Well #28

Address **33 E. Broadway Ave., Suite 200**City **Meridian** State **ID** Zip **83642**

3. WELL LOCATION:

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4. USE:

☐ Domestic ☒ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)

☒ New Well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other _____

6. DRILL METHOD:

☐ Air Rotary ☒ Mud Rotary ☐ Cable ☒ Other **Auger**

7. SEALING PROCEDURES

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					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

SEE PAGE 1

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) **571' (pushed into clay)**

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N Method **N/A**Manufactured screen ☒ Y ☐ N Type **Johnson "HI-Flow" Stainless Steel**Method of installation **Lowered, centralized and enveloped with filter sand**

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule

SEE TABLE THIS PAGE

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13. LITHOLOGIC LOG and/or repairs or abandonment:

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			SCREEN ASSEMBLY:		
			Johnson "HI-FLOW" #304 Stainless Steel Vee-		
			"HI-Q"		
	547	588	9" Pipe Size X 0.030" slot		
	568	581	9" Pipe Size X 0.025" slot		
	581	623	9" Pipe Size X 0.035" slot		
	623	645	9" Pipe Size X 0.030" slot		
	645	673	9" Pipe Size X 0.025" slot		
	673	713	9" Pipe Size X 0.035" slot		
			(bottom screen has welded stainless steel plate)		
			(all screens have 6" long weld-rings)		
			STAINLESS STEEL PACKER-REDUCER:		
			- total length = 4.2 feet		
			- 12" barrel = 3.0 feet		
			- two 3-lip figure "K" neoprene packers		
			- top of packer assembly = 543.8 feet		
			- packer is overshot onto 9" screen headpipe		
			- turn off counter-clockwise		
			WELL DESIGN BY:		
			Hydro Logic, Inc. - Boise, Idaho		
			PUMP CONTRACTOR:		
			Layne of Idaho, Inc. - Nampa, Idaho		
			AUGER HOLE BY:		
			Anderson Wood, Inc. - Boise, Idaho		
			CABLE-TOOL WELL DEVELOPMENT:		
			McLeran Well Drilling - Fruitland, Idaho		

Completed Depth (Measurable) **713 feet below ground**Date: Started **5/18/2009**Completed **7/17/2009**

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